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# WOOD DUCK BANDING PROGRAM PROGRESS REPORT, 1959 and 1960



SPECIAL SCIENTIFIC REPORT: WILDLIFE No. 59

UNITED STATES DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE



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United States Department of the Interior  
Fish and Wildlife Service  
Bureau of Sport Fisheries and Wildlife

**WOOD DUCK BANDING PROGRAM**

**Progress Report, 1959 and 1960**

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U. S. Fish and Wildlife Service  
Special Scientific Report--Wildlife No. 59  
Washington : September 1961

## ABSTRACT

A wood duck banding program was initiated in the Mississippi Flyway in 1959, and renewed emphasis was placed on wood duck banding in the Atlantic Flyway. In 1960, cooperators in the United States and Canada banded 10,563 wood ducks, a 49 percent increase over the number banded in 1959. Uses and limitations of the data are discussed. Pre-hunting season banding provided the most data, but banded samples were too small and too poorly distributed to provide reliable information on population characteristics. The geographical distribution of recoveries from ducks banded in 1959-60 is reported. The data are examined for changes in recovery rates between years, for regional differences in recovery rates associated with the opening dates of the hunting season, and for differences in recovery rates between age groups. In order to indicate the possibilities for use of the data, rough approximations are made of the size, age composition, and harvest rate of the wood duck population in the Mississippi and Atlantic Flyways prior to the 1960-61 hunting season.

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## INTRODUCTION

Because of the wood duck's unique distribution and habitat, reliable population figures are not obtained in annual surveys of waterfowl breeding and wintering grounds. As a result, there has been considerable disagreement concerning the status of the species. In an attempt to correct this situation, the technical section of the Mississippi Flyway Council recommended that a wood duck banding program be undertaken to obtain the necessary information to guide sound management practices. This program began in 1959. In the Atlantic Flyway, although a large number of wood ducks were banded prior to 1959, renewed emphasis was given to wood duck banding.

This report summarizes the banding and recovery data for 1959 and 1960, discusses the uses and limitations of the data and presents preliminary findings.

## BANDING EFFORT

Wood duck banding done by cooperating individuals and agencies during 1959 and 1960 and the early months of 1961 is summarized in table 1.

During 1959, 7,071 wood ducks were banded in the United States and Canada. In Mississippi Flyway States 5,304 wood ducks were banded; 75 percent of the continental total. Within the Mississippi Flyway, 920 wood ducks were banded in Wisconsin. More than 500 wood ducks were banded in each of the States of Minnesota, Michigan, Ohio, Missouri, and Louisiana. The banders in six States banded 73 percent of the Flyway total. In Atlantic Flyway States 1,502 wood ducks were banded; 21 percent of the continental total. The banding of 667 wood ducks in New York contributed 44 percent of the Atlantic Flyway total. Banders in Vermont and West Virginia, combined, banded 597 wood ducks. Thus, 84 percent of the wood ducks banded in the Atlantic Flyway were banded in three States.

During 1960, 10,563 wood ducks were banded in the United States and Canada. This was an increase of 49 percent over the number banded in 1959. The increase was largely the result of greater banding effort in States that were well represented in 1959. As in 1959, banding in 1960 was concentrated in relatively few States. In Mississippi Flyway States 7,625 wood ducks were banded; 72 percent of the continental total. Within the Mississippi Flyway 2,248 wood ducks were banded in Wisconsin and 1,320 were banded in Illinois. More than 500 wood ducks were banded in each of the States of Indiana, Ohio, and Iowa. Thus, banders in five States contributed 76 percent of the Mississippi Flyway total. In Atlantic Flyway States 2,561 wood ducks were banded; 24 percent of the continental total. Of the wood ducks banded in the Atlantic Flyway, 1,568 (61 percent) were banded in New York and Vermont.

## USES AND LIMITATIONS OF THE DATA

### Pre-hunting Season Banding

The banding of an adequate sample of immature and adult wood ducks in late summer and early fall, before the opening of the hunting season, could provide data for estimating mortality rates, for measuring the importance of hunting as a mortality factor, and determining the effects of regulations on the kill. Estimates also could be made of the size of the pre-hunting season population. Since this is the kind of information most urgently needed, pre-season banding is considered the most important.

Most of the banding in the present program was pre-season banding, but even so, the samples were much smaller and more poorly distributed than they should be for reliable results. Recovery rates are shown in table 2. The sample sizes for most of the States appearing in the table were too small to yield very precise estimates of recovery rates. If 50 recoveries are obtained, the sampling error of the estimated recovery rate is about 30 percent at the 95 percent confidence level. Only banding of immatures in Wisconsin, Illinois, and Vermont, in 1960, produced more than 50 direct recoveries to represent each State of banding. When band recoveries are distributed among the various harvest areas, the reliability of the recovery rate estimate in each area decreases further. For reliable data, there should be enough banding in each State to yield at least 50 recoveries for each age group.

Perhaps of even greater importance than sample size is the representativeness of the banded sample. Wood ducks were sampled inadequately in almost the entire southern United States. Also, portions of the northern area are poorly represented. It is particularly important to band pre-season samples of wood ducks in the southern States that are important harvest areas, such as Texas, Mississippi, Alabama, North Carolina, South Carolina, Georgia, and Florida. Louisiana was the only southern State where more than a small number of adult and immature wood ducks were banded.

### Breeding-ground Banding

In order to relate production areas to harvest areas it is necessary to band birds on the breeding area. The banded birds must be either flightless young (locals) or adult nesting birds to be sure that they did not come from some other area. During 1959-60, too few locals were banded in any State to yield an accurate measure of the direct recovery rate or the distribution of the hunting kill (table 2). For example, in 1959-60 a total of 676 locals were banded in Ohio and only 16 were recovered. Thus, not only were the banded samples small, but the recovery

rate was low. Unless more efficient procedures for capturing locals can be devised, it may not be feasible to band enough locals to provide useful data. It would be highly desireable to band a large sample of local and immature birds in the same area to determine the extent to which immatures have the same distribution pattern as locals. Bait-trapping of flying birds has been much more productive than capture of locals, both in number banded and number recovered.

#### Wintering-ground Banding

Wintering-ground banding provides information on the distribution of the hunting kill of wintering populations. Recovery rates from wintering ground banding, in conjunction with recovery rates from pre-season banding, provide information on the total mortality that occurs during the hunting season.

Very little banding was done during the wintering period (January and February) in the present program. During 1959-60, 131 wood ducks were banded in the wintering period; Florida banders supplied 126 of the total. There were no recoveries.

#### DISTRIBUTION PATTERN OF RECOVERIES

The distribution pattern of direct recoveries during 1959-60 is presented in table 3 (Atlantic Flyway) and table 4 (Mississippi Flyway). The small number of recoveries for many States of banding in the Atlantic Flyway is apparent in the table. Only two States had a sufficient number of recoveries to show a harvest pattern. The most important outstate recovery areas for birds banded in New York appeared to be Ontario, North Carolina, and Florida. Vermont out-state recoveries were mainly in Quebec, South Carolina, North Carolina, Florida, and Georgia.

The results of the greater banding effort in the Mississippi Flyway can be seen in table 4. The States of Wisconsin, Minnesota, Michigan, Illinois, Missouri, and Indiana had enough recoveries to indicate the most important areas of harvest outside the State of banding. Birds banded in Wisconsin were recovered most frequently in Minnesota, Iowa, Illinois, Arkansas, Texas, Louisiana, and Mississippi. Recoveries of birds banded in Minnesota appeared primarily in Wisconsin, Louisiana, Arkansas, and Alabama. The most important States in the recovery of birds banded in Michigan were Louisiana and Arkansas. Louisiana, Arkansas, Texas, and Mississippi were the primary States of recovery for birds banded in Illinois. Birds banded in Indiana were recovered in greatest numbers in Louisiana, Mississippi, and Texas. Birds banded in Missouri appeared most often in Arkansas, Louisiana, and Texas.

With the exception of the samples from Louisiana, banded samples representing southern States that are important harvest areas were virtually absent. All except a very few of the birds banded in Louisiana were recovered in Louisiana, suggesting that birds banded in southern States contribute very little to the kill outside the State of banding. Much more late summer banding would be needed in the important southern wintering areas to verify this possibility. Also, if all production areas were represented by banded samples, it might be possible to estimate the fraction of the total wood duck kill in wintering areas that represented locally produced birds.

#### DIRECT RECOVERY RATES

##### Annual Changes in Recovery Rate

Recovery rates in Vermont and New York were lower in 1959-60 than they were in 1958 (table 2), even though the daily bag limit was higher - two birds in 1959-60 and one bird in 1958. No change in recovery rates between 1959 and 1960 is noted for the Mississippi Flyway States. However, sample sizes were too small to detect other than great changes.

##### Recovery Rates of Locals and Immatures

In most areas, there was a much lower recovery rate from birds banded as flightless immatures (locals) than from birds banded as flying immatures. In Ohio, the banding of 676 locals resulted in 16 recoveries (2.4 percent), whereas 102 immatures yielded six recoveries (5.9 percent). In Louisiana, there were no recoveries of 68 banded locals, whereas 478 immatures had a 6.3 percent recovery rate. In Indiana, only one recovery resulted from 93 banded locals (1.1 percent), whereas 391 immatures had a 6.4 percent recovery rate. In Wisconsin, in contrast, the banding of 145 locals yielded a recovery rate of 11.0 percent, whereas 2,172 immatures had a 9.3 percent recovery rate. The causes of the extremely low recovery rate of locals that appears in most areas are unknown. However, a relatively high mortality rate among flightless birds seems likely.

##### Regional Differences in Recovery Rates

Regional differences in recovery rates of immature wood ducks appear to be associated with differences in the opening dates of the hunting season. In 1959 and 1960, the northern States of Minnesota, Wisconsin, Michigan, and Vermont had opening dates from October 7 to 10. A middle tier of States, including Iowa, Illinois, Ohio, and New York, had later opening dates (October 14 to 30). Indiana, Missouri, Tennessee, West Virginia, and Louisiana had the latest opening dates (November 4 to 30). Recovery rates of immatures for

three groups of States are shown in table 7. In 1959, the northern group had a mean recovery rate of 10.2 percent, compared with 5.3 percent for the middle group, and 4.6 percent for the southern group. Similarly, in 1960, the mean recovery rate was 9.2 percent in the northern group, 6.9 percent in the middle group, and 4.5 percent in the southern group. Apparently, birds banded in the northern States with the earliest opening dates are subjected to greater shooting pressure than those in the States further south with later opening dates.

#### Differences Between Age Groups in the Recovery Rate

Generally, the direct recovery rate of birds banded as immatures was greater than that of adults. A measure of the extent to which immature birds are more likely to be shot than adults is needed to interpret age ratios in the hunting kill. Since wood duck age ratios in the hunting kill were measured in the 1959 and 1960 seasons in the Mississippi Flyway, and in the 1960 season in the Atlantic Flyway, table 5 was prepared to provide an estimate of the relative recovery rates. Recovery rates were calculated from the combined data for 1958 (New York and Vermont only), 1959, and 1960 in the major banding States; data for each State were weighted equally. The mean direct recovery rate was 5.5 percent for adults and 7.7 percent for immatures, indicating that immatures were 1.4 times more likely to be recovered than adults.

#### Differences Between Harvest Areas in Relative Recovery Rates

Differences between harvest areas in relative recovery rates are presented in table 6. Data from Vermont and Wisconsin, the States where the most birds were banded, are used to show differences in the relative recovery rate between northern and southern harvest areas. Bandings in Wisconsin indicated a greater relative recovery rate in northern States (1.8) than in southern States (1.3), while bandings in Vermont suggested a greater relative recovery rate in southern States (1.4) than in northern States (1.2). Sample sizes are too small for these estimates to be very precise. Nevertheless, these seemingly inconsistent findings agree with age ratios observed in the duck wing collection. In both the 1959 and 1960 hunting seasons, wood duck age ratios determined from wings collected in the Mississippi Flyway were higher in northern States than in the South (Geis and Carney, 1961). In contrast, age ratios from wings collected in the Atlantic Flyway in 1960 were lower in northern States than in the South (Geis and Carney, 1961).

## ESTIMATE OF THE PROPORTION OF THE PRE-SEASON WOOD DUCK POPULATION BAGGED

The best estimates of recovery rates for the continental pre-season population are 7.7 percent for immatures and 5.5 percent for adults (as shown in table 5 and discussed above). These rates can be used with data from the Mail Questionnaire Survey to estimate the proportion of the pre-season population that was bagged. The Mail Questionnaire Survey indicated that 49 percent of the wood duck bands taken are reported (Geis and Atwood, 1961). When wood duck recovery rates are adjusted to include unreported bands, it is estimated that 15.7 percent of the immatures and 11.2 percent of the adults are bagged each year (hunting kill rate). If there is a crippling loss equal to 25 percent of the birds bagged, the kill estimate becomes 19.6 percent for immatures and 14.0 percent for adults. It is reasonable to assume that annual rates of mortality from all causes are at least 50 percent for immatures and at least 40 percent for adults. If this is true, then hunting would account for less than one-half of the total mortality. It should be emphasized that this estimate is only a rough approximation. However, it suggests that hunting pressure might be less important to the continental wood duck population than it is to the mallard (Smith and Geis, 1961) or the canvasback (Geis, 1960). This does not preclude the possibility that hunting is locally important. For example, it was shown above that recovery rates from wood ducks banded in northern States were substantially higher than those from more southern banding areas.

## PRE-SEASON POPULATION ESTIMATES

Using the hunting kill rates derived in the previous section (15.7 percent for immatures and 11.2 percent for adults), it is possible to estimate the size of the wood duck population before the hunting season. The population estimate is made by dividing the hunting kill rates of each age group into the estimate of the number of birds killed in each age group. The estimate of the total number of birds killed (266,873) is taken from the results of the Mail Questionnaire Survey (Atwood and Wells, 1961 a,b). Segregation of the kill estimate into age groups is based on the weighted age ratio (2.1) in the portion of the hunting kill examined by the Wing Collection Survey (Geis and Carney, 1961). Estimates of the pre-season population size and age ratio may be made from the following relationships:

1.  $Ki/Ka = PiRi/PaRa$  or,  $Ki = PiRi$  and  $Ka = PaRa$
2.  $Pi/Pa = \frac{Ki/Ka}{Ri/Ra}$
3.  $Ri/Ra = \frac{Ki/Ka}{Pi/Pa}$
4.  $P = Pi + Pa = Ki/Ri + Ka/Ra$

Where:

$K_i$  = number of immatures in the total kill

= total kill (Mail Quest.)  $\times$   $\frac{\text{immature wings}}{\text{total wings}}$  (Wing Coll.)

$K_a$  = number of adults in the total kill

= total kill (Mail Quest.)  $\times$   $\frac{\text{adult wings}}{\text{total wings}}$  (Wing Coll.)

$R_i$  = immature hunting kill rate = number recovered/number banded  
(adjusted for unreported bands).

$R_a$  = adult hunting kill rate = number recovered/number banded  
(adjusted for unreported bands).

$P_i$  = number of immatures in the pre-season population (unknown).

$P_a$  = number of adults in the pre-season population (unknown).

$K_i/K_a$  = kill age ratio

$P_i/P_a$  = pre-season population age ratio

$R_i/R_a$  = relative recovery rate of immatures to adults

$P$  = pre-season population

Table 8 summarizes the calculations. The estimate of the 1960 pre-season population in the Atlantic and Mississippi Flyway is about 2,000,000 birds with an age ratio of 1.5 immatures per adult.

#### SUMMARY

A wood duck banding program was initiated in 1959 in the Mississippi Flyway and supplemented by renewed emphasis on wood duck banding in the Atlantic Flyway. In 1960, cooperators in the United States and Canada banded 10,563 wood ducks, a 49 percent increase over the number banded in 1959. Seventy-two percent of the continental total was banded in the Mississippi Flyway States. Lack of an even distribution of banding effort was noted in that banders in five States (Wisconsin, Illinois, Indiana, Ohio, and Iowa) in the Mississippi Flyway banded 76 percent of the Flyway total and banders in two States (New York and Vermont) banded 61 percent of the Atlantic Flyway total.

Uses and limitations of the data are discussed. The pre-hunting season banding provided the most data, but even these samples were much smaller and more poorly distributed than they should be for reliable results. Breeding-ground banding (primarily the banding of flightless young) provided very small samples; the recovery rate also was very low. The possibility of banding flying immatures instead of locals (flightless young) was considered. Only a few birds were banded during the wintering period and there were no recoveries.

The distribution of recoveries from 1959-60 banded samples is reported; in many States, particularly those in the south, an insufficient number of birds were banded to produce a recovery pattern.

Direct band recovery rates were examined for changes between years. There was no discernible increase in the recovery rate from bandings in the States of Vermont and New York between the 1958-59 and 1959-60 hunting seasons, even though the daily bag limit was increased from one bird in 1958-59 to two birds in 1959-60.

There appeared to be regional differences in recovery rate associated with the opening dates of the hunting season. The mean recovery rate of immatures was higher in the more northern States which selected the earlier opening dates than in the southern States which selected later opening dates. This suggests that birds located in the States selecting the earlier opening date are subjected to a greater shooting pressure.

The direct recovery rate of birds banded as immatures was generally greater than that of adults. There appeared to be regional differences in the relative recovery rate. Bandings in Wisconsin indicated a greater relative recovery rate of immatures in the northern States, while bandings in Vermont suggested a greater relative recovery rate of immatures in the southern States. This finding was supported by age ratios observed in the duck wing collection.

A rough approximation of the proportion of the pre-season wood duck population bagged indicated that hunting accounted for less than one-half of the total mortality during 1959-60.

Pre-season population size and age ratio were estimated using information from band recoveries, the Mail Questionnaire Survey, and the Wing Collection Survey. This estimate, which also must be considered very approximate, indicated that the wood duck population in the Atlantic and Mississippi Flyways before the 1960-61 hunting season was about 2,000,000 birds with an age ratio of 1.5 immatures per adult.

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Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961.

| State and Permittee   | Year | Month     | Adult | Immature | Local | Unknown | All Ages |
|-----------------------|------|-----------|-------|----------|-------|---------|----------|
| <u>Alabama:</u>       |      |           |       |          |       |         |          |
| Dept. of Conservation | 1959 | June      | 1     | 0        | 14    | 0       | 15       |
|                       |      | October   | 2     | 12       | 0     | 0       | 14       |
|                       |      | Total     | 3     | 12       | 14    | 0       | 29       |
|                       | 1960 | May       | 2     | 0        | 0     | 0       | 2        |
|                       |      | June      | 14    | 0        | 72    | 0       | 86       |
|                       |      | Total     | 16    | 0        | 72    | 0       | 88       |
|                       | 1961 | May       | 0     | 0        | 21    | 0       | 21       |
| <u>Arkansas:</u>      |      |           |       |          |       |         |          |
| Marcus J. Turner      | 1960 | April     | 20    | 0        | 0     | 0       | 20       |
| <u>Delaware:</u>      |      |           |       |          |       |         |          |
| Bombay Hook NWR       | 1959 | March     | 1     | 0        | 0     | 0       | 1        |
|                       | 1960 | March     | 5     | 0        | 0     | 0       | 5        |
| <u>Florida:</u>       |      |           |       |          |       |         |          |
| Chassahowitzka NWR    | 1959 | September | 8     | 2        | 0     | 0       | 10       |
|                       |      | October   | 0     | 1        | 0     | 0       | 1        |
|                       |      | Total     | 8     | 3        | 0     | 0       | 11       |
|                       | 1960 | August    | 1     | 5        | 0     | 0       | 6        |
|                       |      | September | 0     | 11       | 0     | 0       | 11       |
|                       |      | Total     | 1     | 16       | 0     | 0       | 17       |
| Jacob W. Wolfley      | 1961 | Feb.      | 22    | 0        | 0     | 0       | 22       |
|                       |      | March     | 6     | 0        | 0     | 0       | 6        |
|                       |      | Total     | 28    | 0        | 0     | 0       | 28       |

Continued-----

Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Continued).

| State and Permittee                   | Year         | Month   | Adult                                      | Immature                                   | Local                                | Unknown                               | All Ages                                       |
|---------------------------------------|--------------|---|--|--|--------------------------------------|---------------------------------------|--|
| <u>Florida:</u>                       |              |   |  |  |                                      |                                       |  |
| Goodman K. Larson                     | 1960         | Feb.  | 19   | 0  | 0                                    | 0                                     | 19   |
| Noah H. Long                          | 1960         | Feb.  | 19   | 0  | 0                                    | 0                                     | 19   |
| Leo M. Martin                         | 1961         | Jan.<br>Feb.  | 10<br>4<br>Total 14                        | 0<br>0<br>0                                | 0<br>0<br>0                          | 0<br>0<br>0                           | 10<br>4<br>14                                  |
| Game & Fresh Water<br>Fish Commission | 1959<br>1961 | July<br>March   | 0<br>3                                     | 3<br>0                                     | 0<br>0                               | 0<br>0                                | 3<br>3   |
| <u>Georgia:</u>                       |              |   |  |  |                                      |                                       |  |
| N. J. Fleetwood                       | 1960         | August<br>Sept.<br>Total  | 0<br>0<br>0                                | 9<br>2<br>11                               | 0<br>0<br>0                          | 0<br>0<br>0                           | 9<br>2<br>11                                   |
|                                       | 1961         | Feb.  | 1  | 0  | 0                                    | 0                                     | 1  |
| <u>Illinois:</u>                      |              |   |  |  |                                      |                                       |  |
| Dept. of Conservation                 | 1960         | Aug.<br>Sept.<br>Oct.<br>Total                                  | 65<br>53<br>16<br>134                      | 454<br>275<br>218<br>947                   | 0<br>0<br>0<br>0                     | 0<br>0<br>0<br>0                      | 519<br>328<br>234<br>1,081                     |
| Natural History Survey                | 1959         | April<br>June<br>July<br>Aug.<br>Sept.<br>Oct.<br>Nov.<br>Total | 115<br>12<br>0<br>0<br>12<br>4<br>8<br>151 | 0<br>60<br>48<br>16<br>24<br>8<br>4<br>160 | 0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 | 0<br>0<br>8<br>0<br>2<br>0<br>0<br>10 | 115<br>72<br>56<br>16<br>38<br>12<br>12<br>321 |

Continued -----

Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Continued).

| State and Permittee    | Year | Month  | Adult | Immature | Local | Unknown | All Ages |
|------------------------|------|--------|-------|----------|-------|---------|----------|
| <b>Illinois:</b>       |      |        |       |          |       |         |          |
| Natural History Survey | 1960 | April  | 0     | 5        | 0     | 0       | 5        |
|                        |      | May    | 0     | 27       | 0     | 0       | 27       |
|                        |      | June   | 0     | 13       | 0     | 0       | 13       |
|                        |      | July   | 0     | 1        | 0     | 0       | 1        |
|                        |      | Sept.  | 4     | 6        | 0     | 9       | 19       |
|                        |      | Total  | 4     | 52       | 0     | 9       | 65       |
| Chautauqua NWR         | 1959 | April  | 4     | 0        | 0     | 0       | 4        |
|                        |      | May    | 4     | 0        | 0     | 0       | 4        |
|                        |      | June   | 2     | 0        | 0     | 0       | 2        |
|                        |      | July   | 0     | 21       | 0     | 0       | 21       |
|                        |      | August | 22    | 51       | 0     | 0       | 73       |
|                        |      | Sept.  | 5     | 1        | 0     | 0       | 6        |
|                        |      | Dec.   | 1     | 0        | 0     | 0       | 1        |
|                        |      | Total  | 38    | 73       | 0     | 0       | 111      |
|                        | 1960 | May    | 9     | 0        | 0     | 0       | 9        |
|                        |      | June   | 3     | 2        | 0     | 0       | 5        |
|                        |      | July   | 0     | 50       | 0     | 0       | 50       |
|                        |      | Aug.   | 6     | 96       | 0     | 0       | 102      |
|                        |      | Sept.  | 1     | 2        | 0     | 0       | 3        |
|                        |      | Total  | 19    | 150      | 0     | 0       | 169      |
| Upper Miss. River NWR  | 1959 | Sept.  | 15    | 26       | 0     | 0       | 41       |
| Mark Twain NWR         | 1959 | Sept.  | 3     | 19       | 0     | 0       | 22       |
|                        |      | Oct.   | 1     | 2        | 0     | 0       | 3        |
|                        |      | Total  | 4     | 21       | 0     | 0       | 25       |
|                        | 1960 | Sept.  | 0     | 5        | 0     | 0       | 5        |
|                        | 1961 | May    | 1     | 0        | 0     | 0       | 1        |

Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Continued).

| State and Permittee   | Year | Month | Adult | Immature | Local | Unknown | All Ages |
|-----------------------|------|-------|-------|----------|-------|---------|----------|
| <u>Indiana:</u>       |      |       |       |          |       |         |          |
| Dept. of Conservation | 1959 | July  | 0     | 0        | 13    | 0       | 13       |
|                       |      | Aug.  | 16    | 39       | 10    | 0       | 65       |
|                       |      | Sept. | 112   | 58       | 0     | 0       | 170      |
|                       |      | Oct.  | 19    | 21       | 0     | 0       | 40       |
|                       |      | Total | 147   | 118      | 23    | 0       | 288      |
|                       | 1960 | June  | 2     | 0        | 70    | 0       | 72       |
|                       |      | July  | 5     | 20       | 0     | 0       | 25       |
|                       |      | Aug.  | 61    | 109      | 0     | 5       | 175      |
|                       |      | Sept. | 368   | 164      | 0     | 0       | 532      |
|                       |      | Oct.  | 17    | 3        | 0     | 0       | 20       |
|                       |      | Total | 453   | 296      | 70    | 5       | 824      |
|                       | 1961 | Feb.  | 1     | 0        | 0     | 0       | 1        |
| Henry C. West         | 1960 | July  | 0     | 1        | 0     | 0       | 1        |
| <u>Iowa:</u>          |      |       |       |          |       |         |          |
| Upper Miss. River NWR | 1959 | Aug.  | 3     | 62       | 0     | 0       | 65       |
|                       |      | Sept. | 13    | 34       | 0     | 0       | 47       |
|                       |      | Total | 16    | 96       | 0     | 0       | 112      |
|                       | 1960 | June  | 6     | 0        | 11    | 0       | 17       |
|                       |      | July  | 4     | 0        | 47    | 0       | 51       |
|                       |      | Aug.  | 15    | 407      | 0     | 0       | 422      |
|                       |      | Total | 25    | 407      | 58    | 0       | 490      |
| Union Slough NWR      | 1959 | July  | 4     | 26       | 8     | 2       | 40       |
|                       |      | Aug.  | 14    | 24       | 10    | 0       | 48       |
|                       |      | Sept. | 10    | 9        | 0     | 0       | 19       |
|                       |      | Total | 28    | 59       | 18    | 2       | 107      |

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Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Continued).

| State and Permittee   | Year | Month | Adult | Immature | Local | Unknown | All Ages |
|-----------------------|------|-------|-------|----------|-------|---------|----------|
| <u>Iowa:</u>          |      |       |       |          |       |         |          |
| Union Slough NWR      | 1960 | July  | 8     | 0        | 39    | 0       | 47       |
|                       |      | Aug.  | 8     | 4        | 13    | 0       | 25       |
|                       |      | Sept. | 0     | 3        | 0     | 0       | 3        |
|                       |      | Total | 16    | 7        | 52    | 0       | 75       |
| Mark Twain NWR        | 1959 | Aug.  | 0     | 4        | 0     | 0       | 4        |
|                       |      | Sept. | 1     | 19       | 0     | 4       | 24       |
|                       |      | Total | 1     | 23       | 0     | 4       | 28       |
|                       | 1960 | Aug.  | 0     | 21       | 0     | 0       | 21       |
| Dept. of Conservation | 1960 | July  | 0     | 3        | 0     | 0       | 3        |
|                       |      | Aug.  | 0     | 3        | 0     | 0       | 3        |
|                       |      | Sept. | 0     | 4        | 0     | 0       | 4        |
|                       |      | Dec.  | 0     | 18       | 0     | 0       | 18       |
|                       |      | Total | 0     | 28       | 0     | 0       | 28       |
| <u>Kentucky:</u>      |      |       |       |          |       |         |          |
| Div. of Fish & Game   | 1959 | March | 10    | 0        | 0     | 0       | 10       |
|                       |      | April | 0     | 0        | 0     | 3       | 3        |
|                       |      | May   | 0     | 0        | 12    | 0       | 12       |
|                       |      | June  | 0     | 0        | 4     | 0       | 4        |
|                       |      | July  | 0     | 0        | 1     | 0       | 1        |
|                       |      | Total | 10    | 0        | 17    | 3       | 30       |
|                       | 1960 | March | 26    | 0        | 0     | 0       | 26       |
|                       |      | April | 4     | 0        | 0     | 0       | 4        |
|                       |      | May   | 0     | 0        | 3     | 0       | 3        |
|                       |      | June  | 1     | 7        | 25    | 0       | 33       |
|                       |      | July  | 0     | 0        | 3     | 0       | 3        |
|                       |      | Total | 31    | 7        | 31    | 0       | 69       |
| Willie J. Parker      | 1960 | June  | 1     | 0        | 0     | 25      | 26       |

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Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Cont'd).

| State and Permittee                 | Year  | Month | Adult | Immature | Local | Unknown | All Ages |
|-------------------------------------|-------|-------|-------|----------|-------|---------|----------|
| <u>Louisiana:</u>                   |       |       |       |          |       |         |          |
| Wild Life & Fisheries<br>Commission |       |       |       |          |       |         |          |
| 1959                                | May   |       | 1     | 0        | 0     | 0       | 1        |
|                                     | June  |       | 0     | 0        | 14    | 0       | 14       |
|                                     | July  |       | 0     | 0        | 14    | 0       | 14       |
|                                     | Aug.  |       | 0     | 88       | 18    | 0       | 106      |
|                                     | Sept. |       | 21    | 228      | 6     | 0       | 255      |
|                                     | Oct.  |       | 70    | 78       | 0     | 0       | 148      |
|                                     | Total |       | 92    | 394      | 52    | 0       | 538      |
| 1960                                | Feb.  |       | 30    | 0        | 0     | 0       | 30       |
|                                     | March |       | 14    | 0        | 0     | 0       | 14       |
|                                     | April |       | 10    | 1        | 0     | 0       | 11       |
|                                     | June  |       | 37    | 30       | 13    | 0       | 80       |
|                                     | July  |       | 66    | 68       | 3     | 2       | 139      |
|                                     | Aug.  |       | 3     | 30       | 0     | 0       | 33       |
|                                     | Sept. |       | 3     | 34       | 0     | 0       | 37       |
|                                     | Oct.  |       | 12    | 22       | 0     | 0       | 34       |
|                                     | Total |       | 175   | 185      | 16    | 0       | 378      |
| 1961                                | May   |       | 4     | 0        | 4     | 0       | 8        |
| <u>Maine:</u>                       |       |       |       |          |       |         |          |
| Moosehorn NWR                       |       |       |       |          |       |         |          |
| 1959                                | Sept. |       | 2     | 2        | 0     | 0       | 4        |
|                                     | Oct.  |       | 15    | 3        | 0     | 0       | 18       |
|                                     | Total |       | 17    | 5        | 0     | 0       | 22       |
| 1960                                | Sept. |       | 16    | 3        | 0     | 0       | 19       |
|                                     | Oct.  |       | 0     | 3        | 0     | 0       | 3        |
|                                     | Total |       | 16    | 6        | 0     | 0       | 22       |
| Coop. Wildl. Res. Unit              |       |       |       |          |       |         |          |
| 1959                                | June  |       | 4     | 4        | 0     | 0       | 8        |
|                                     | July  |       | 2     | 1        | 2     | 0       | 5        |
|                                     | Aug.  |       | 0     | 0        | 4     | 0       | 4        |
|                                     | Total |       | 6     | 5        | 6     | 0       | 17       |

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Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Cont'd).

| State and Permittee                 | Year | Month | Adult | Immature | Local | Unknown | All Ages |
|-------------------------------------|------|-------|-------|----------|-------|---------|----------|
| <u>Maine:</u>                       |      |       |       |          |       |         |          |
| Coop. Wildl. Res. Unit              | 1960 | June  | 2     | 0        | 0     | 0       | 2        |
|                                     | 1961 | June  | 0     | 0        | 4     | 0       | 4        |
| <u>Manitoba:</u>                    |      |       |       |          |       |         |          |
| Delta Waterfowl<br>Research Station | 1959 | June  | 15    | 0        | 0     | 0       | 15       |
|                                     |      | July  | 1     | 0        | 0     | 0       | 1        |
|                                     |      | Aug.  | 22    | 4        | 0     | 0       | 26       |
|                                     |      | Sept. | 12    | 4        | 0     | 0       | 16       |
|                                     |      | Total | 50    | 8        | 0     | 0       | 58       |
|                                     | 1960 | April | 2     | 0        | 0     | 0       | 2        |
|                                     |      | May   | 4     | 0        | 0     | 0       | 4        |
|                                     |      | June  | 11    | 0        | 0     | 0       | 11       |
|                                     |      | July  | 1     | 0        | 0     | 0       | 1        |
|                                     |      | Aug.  | 11    | 0        | 0     | 0       | 11       |
|                                     |      | Sept. | 3     | 1        | 0     | 0       | 4        |
|                                     |      | Total | 32    | 1        | 0     | 0       | 33       |
| Ducks Unlimited                     | 1961 | Jan.  | 10    | 0        | 0     | 0       | 10       |
|                                     |      | June  | 10    | 0        | 0     | 0       | 10       |
|                                     |      | Total | 20    | 0        | 0     | 0       | 20       |
|                                     | 1960 | Aug.  | 1     | 0        | 0     | 0       | 1        |

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Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Continued).

| State and Permittee        | Year | Month | Adult | Immature | Local | Unknown | All Ages |
|----------------------------|------|-------|-------|----------|-------|---------|----------|
| <u>Massachusetts:</u>      |      |       |       |          |       |         |          |
| Parker River NWR           | 1959 | Sept. | 23    | 9        | 0     | 0       | 32       |
|                            |      | Oct.  | 12    | 5        | 0     | 0       | 17       |
|                            |      | Total | 35    | 14       | 0     | 0       | 49       |
|                            | 1960 | Sept. | 50    | 59       | 0     | 0       | 109      |
| Richard Borden             | 1959 | June  | 0     | 11       | 0     | 0       | 11       |
| Stuart D. Henderson        | 1961 | May   | 5     | 0        | 0     | 0       | 5        |
| David K. Wetherbee         | 1960 | May   | 1     | 0        | 0     | 0       | 1        |
| <u>Michigan:</u>           |      |       |       |          |       |         |          |
| Department of Conservation | 1959 | May   | 1     | 0        | 0     | 0       | 1        |
|                            |      | June  | 2     | 0        | 16    | 0       | 18       |
|                            |      | July  | 15    | 0        | 96    | 0       | 111      |
|                            |      | Aug.  | 12    | 28       | 11    | 0       | 51       |
|                            |      | Sept. | 6     | 7        | 2     | 0       | 15       |
|                            |      | Oct.  | 4     | 1        | 0     | 0       | 5        |
|                            |      | Total | 40    | 36       | 125   | 0       | 201      |
|                            | 1960 | July  | 0     | 0        | 14    | 0       | 14       |
|                            |      | Aug.  | 15    | 54       | 27    | 0       | 96       |
|                            |      | Sept. | 26    | 61       | 4     | 0       | 91       |
|                            |      | Total | 41    | 115      | 45    | 0       | 201      |
| Seney NWR                  | 1959 | July  | 2     | 11       | 0     | 0       | 13       |
|                            |      | Aug.  | 68    | 10       | 0     | 0       | 78       |
|                            |      | Sept. | 36    | 16       | 0     | 0       | 52       |
|                            |      | Oct.  | 6     | 2        | 0     | 0       | 8        |
|                            |      | Total | 112   | 39       | 0     | 0       | 151      |

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Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Cont'd.).

| State and Permittee    | Year | Month | Adult | Immature | Local | Unknown | All Ages |
|------------------------|------|-------|-------|----------|-------|---------|----------|
| <u>Michigan:</u>       |      |       |       |          |       |         |          |
| Seney NWR              | 1960 | Aug.  | 49    | 36       | 0     | 0       | 84       |
|                        |      | Sept. | 36    | 22       | 0     | 1       | 59       |
|                        |      | Oct.  | 1     | 0        | 0     | 0       | 1        |
|                        |      | Total | 86    | 58       | 0     | 1       | 145      |
| Shiawassee NWR         | 1959 | July  | 0     | 5        | 0     | 0       | 5        |
|                        |      | Aug.  | 0     | 9        | 0     | 0       | 9        |
|                        |      | Sept. | 18    | 65       | 0     | 0       | 83       |
|                        |      | Oct.  | 3     | 2        | 0     | 0       | 5        |
|                        |      | Total | 21    | 81       | 0     | 0       | 102      |
|                        | 1960 | Aug.  | 0     | 5        | 0     | 0       | 5        |
|                        |      | Sept. | 0     | 3        | 0     | 0       | 3        |
|                        |      | Total | 0     | 8        | 0     | 0       | 8        |
| Kellogg Bird Sanctuary | 1959 | April | 1     | 0        | 0     | 0       | 1        |
|                        |      | July  | 5     | 0        | 1     | 0       | 6        |
|                        |      | Aug.  | 12    | 21       | 0     | 0       | 33       |
|                        |      | Sept. | 7     | 13       | 0     | 0       | 20       |
|                        |      | Total | 25    | 34       | 1     | 0       | 60       |
|                        | 1960 | Aug.  | 1     | 12       | 0     | 0       | 13       |
|                        |      | Sept. | 0     | 2        | 0     | 0       | 2        |
|                        |      | Oct.  | 2     | 2        | 0     | 0       | 4        |
|                        |      | Total | 3     | 16       | 0     | 0       | 19       |
| Karl Christofferson    | 1960 | Sept. | 0     | 9        | 0     | 0       | 9        |
|                        |      | Oct.  | 4     | 9        | 0     | 0       | 13       |
|                        |      | Total | 4     | 18       | 0     | 0       | 22       |

Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Cont'd.).

| State and Permittee   | Year | Month | Adult | Immature | Local | Unknown | All Ages |
|-----------------------|------|-------|-------|----------|-------|---------|----------|
| <u>Minnesota:</u>     |      |       |       |          |       |         |          |
| Dept. of Conservation | 1959 | July  | 0     | 0        | 1     | 0       | 1        |
|                       |      | Sept. | 107   | 271      | 0     | 1       | 379      |
|                       |      | Oct.  | 3     | 7        | 6     | 0       | 16       |
|                       |      | Total | 110   | 278      | 7     | 1       | 396      |
| Upper Miss. River NWR | 1959 | July  | 3     | 0        | 74    | 3       | 80       |
|                       |      | Sept. | 33    | 57       | 0     | 9       | 99       |
|                       |      | Total | 36    | 57       | 74    | 12      | 179      |
|                       | 1960 | June  | 2     | 0        | 1     | 0       | 3        |
|                       |      | July  | 0     | 0        | 22    | 0       | 22       |
|                       |      | Aug.  | 2     | 4        | 12    | 0       | 18       |
|                       |      | Sept. | 38    | 88       | 0     | 0       | 126      |
|                       |      | Total | 42    | 92       | 35    | 0       | 169      |
| Rice Lake NWR         | 1959 | Aug.  | 34    | 31       | 0     | 0       | 65       |
|                       |      | Sept. | 7     | 16       | 0     | 0       | 23       |
|                       |      | Oct.  | 1     | 9        | 0     | 0       | 10       |
|                       |      | Total | 42    | 56       | 0     | 0       | 98       |
|                       | 1960 | July  | 3     | 0        | 0     | 0       | 3        |
|                       |      | Aug.  | 38    | 11       | 0     | 0       | 49       |
|                       |      | Sept. | 3     | 3        | 0     | 0       | 6        |
|                       |      | Oct.  | 19    | 41       | 0     | 0       | 60       |
|                       |      | Total | 63    | 55       | 0     | 0       | 118      |
| Carl M. Johnson       | 1959 | March | 1     | 0        | 0     | 0       | 1        |
|                       |      | Sept. | 1     | 0        | 0     | 0       | 1        |
|                       |      | Total | 2     | 0        | 0     | 0       | 2        |
| Forest V. Strnad      | 1959 | Dec.  | 2     | 0        | 0     | 0       | 2        |
| Mud Lake NWR          | 1960 | Sept. | 1     | 0        | 0     | 0       | 1        |

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Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Continued).

| State and Permittee     | Year | Month | Adult | Immature | Local | Unknown | All Ages |
|-------------------------|------|-------|-------|----------|-------|---------|----------|
| <u>Mississippi:</u>     |      |       |       |          |       |         |          |
| William R. Edwards      | 1960 | July  | 0     | 4        | 0     | 0       | 4        |
| <u>Missouri:</u>        |      |       |       |          |       |         |          |
| Conservation Commission | 1959 | June  | 2     | 0        | 25    | 0       | 27       |
|                         |      | July  | 10    | 72       | 26    | 0       | 108      |
|                         |      | Aug.  | 24    | 93       | 0     | 0       | 117      |
|                         |      | Sept. | 81    | 150      | 0     | 0       | 231      |
|                         |      | Oct.  | 62    | 87       | 0     | 0       | 149      |
|                         |      | Total | 179   | 402      | 51    | 0       | 632      |
|                         | 1960 | June  | 0     | 0        | 3     | 0       | 3        |
|                         |      | July  | 11    | 46       | 12    | 0       | 69       |
|                         |      | Aug.  | 24    | 26       | 9     | 1       | 60       |
|                         |      | Sept. | 124   | 68       | 2     | 0       | 194      |
|                         |      | Oct.  | 12    | 9        | 0     | 0       | 21       |
|                         |      | Total | 171   | 149      | 26    | 1       | 347      |
| Mingo NWR               | 1959 | Sept. | 3     | 11       | 0     | 0       | 14       |
|                         |      | Oct.  | 19    | 2        | 0     | 0       | 21       |
|                         |      | Total | 22    | 13       | 0     | 0       | 35       |
|                         | 1960 | March | 0     | 0        | 0     | 4       | 4        |
|                         |      | Aug.  | 18    | 16       | 0     | 0       | 34       |
|                         |      | Sept. | 18    | 31       | 0     | 0       | 49       |
|                         |      | Total | 36    | 47       | 0     | 4       | 87       |
| Squaw Creek NWR         | 1959 | March | 2     | 0        | 0     | 0       | 2        |
|                         |      | Sept. | 2     | 4        | 0     | 0       | 6        |
|                         |      | Total | 4     | 4        | 0     | 0       | 8        |

Continued ---

Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Cont inued).

| State and Permittee   | Year | Month | Adult | Immature | Local | Unknown | All Ages |
|-----------------------|------|-------|-------|----------|-------|---------|----------|
| <u>New Brunswick:</u> |      |       |       |          |       |         |          |
| Bruce Wright          | 1959 | Sept. | 32    | 14       | 0     | 0       | 46       |
|                       |      | Oct.  | 2     | 0        | 0     | 2       | 4        |
|                       |      | Total | 34    | 14       | 0     | 2       | 50       |
|                       | 1960 | Aug.  | 3     | 6        | 0     | 0       | 9        |
|                       |      | Sept. | 6     | 7        | 0     | 0       | 13       |
|                       |      | Total | 9     | 13       | 0     | 0       | 22       |
| <u>New Hampshire:</u> |      |       |       |          |       |         |          |
| Howard Brown          | 1959 | Sept. | 12    | 39       | 10    | 0       | 61       |
|                       | 1960 | May   | 2     | 0        | 0     | 0       | 2        |
|                       |      | June  | 1     | 0        | 0     | 0       | 1        |
|                       |      | Total | 3     | 0        | 0     | 0       | 3        |
| William D. Snow       | 1960 | Aug.  | 9     | 26       | 0     | 0       | 35       |
|                       |      | Sept. | 0     | 14       | 0     | 0       | 14       |
|                       |      | Total | 9     | 40       | 0     | 0       | 49       |
| <u>New Jersey:</u>    |      |       |       |          |       |         |          |
| Brigantine NWR        | 1959 | Sept. | 1     | 12       | 0     | 0       | 13       |
|                       |      | Oct.  | 6     | 6        | 0     | 0       | 12       |
|                       |      | Nov.  | 5     | 0        | 0     | 0       | 5        |
|                       |      | Total | 12    | 18       | 0     | 0       | 30       |
| W. A. Jarvis          | 1960 | Sept. | 0     | 0        | 0     | 2       | 2        |

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Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Continued).

| State and Permittee   | Year | Month | Adult | Immature | Local | Unknown | All Ages |
|-----------------------|------|-------|-------|----------|-------|---------|----------|
| <u>New York:</u>      |      |       |       |          |       |         |          |
| Dept. of Conservation | 1959 | April | 1     | 0        | 0     | 0       | 1        |
|                       |      | May   | 8     | 0        | 0     | 0       | 8        |
|                       |      | June  | 7     | 0        | 4     | 0       | 11       |
|                       |      | July  | 16    | 34       | 22    | 0       | 72       |
|                       |      | Aug.  | 48    | 97       | 69    | 0       | 214      |
|                       |      | Sept. | 46    | 61       | 0     | 0       | 107      |
|                       |      | Oct.  | 74    | 159      | 0     | 0       | 233      |
|                       |      | Total | 200   | 351      | 95    | 0       | 646      |
|                       | 1960 | May   | 22    | 0        | 0     | 0       | 22       |
|                       |      | June  | 10    | 0        | 0     | 0       | 10       |
|                       |      | Aug.  | 72    | 306      | 0     | 1       | 379      |
|                       |      | Sept. | 62    | 179      | 0     | 0       | 241      |
|                       |      | Oct.  | 4     | 13       | 0     | 0       | 17       |
|                       |      | Nov.  | 2     | 1        | 0     | 0       | 3        |
|                       |      | Total | 172   | 499      | 0     | 1       | 672      |
| Montezuma NWR         | 1960 | July  | 2     | 0        | 3     | 0       | 5        |
|                       |      | Sept. | 14    | 10       | 0     | 0       | 24       |
|                       |      | Oct.  | 8     | 11       | 0     | 6       | 25       |
|                       |      | Total | 24    | 21       | 3     | 6       | 54       |
| Stanley O. Grierson   | 1959 | Aug.  | 6     | 3        | 0     | 0       | 9        |
|                       |      | Sept. | 7     | 4        | 0     | 0       | 11       |
|                       |      | Total | 13    | 7        | 0     | 0       | 20       |
| John W. Taylor        | 1960 | Feb.  | 2     | 0        | 0     | 0       | 2        |
| Eugene Decker         | 1959 | May   | 1     | 0        | 0     | 0       | 1        |
| Leroy Wilcox          | 1960 | Aug.  | 0     | 1        | 0     | 0       | 1        |

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Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Cont'd.).

| <u>State and Permittee</u> | <u>Year</u> | <u>Month</u> | <u>Adult</u> | <u>Immature</u> | <u>Local</u> | <u>Unknown</u> | <u>All Ages</u> |
|----------------------------|-------------|--------------|--------------|-----------------|--------------|----------------|-----------------|
| <u>North Carolina:</u>     |             |              |              |                 |              |                |                 |
| Wildl. Resources Comm.     | 1959        | Nov.         | 2            | 4               | 0            | 0              | 6               |
|                            | 1960        | Feb.         | 0            | 0               | 0            | 6              | 6               |
|                            |             | March        | 2            | 0               | 0            | 24             | 26              |
|                            |             | April        | 0            | 0               | 0            | 16             | 16              |
|                            |             | May          | 0            | 0               | 0            | 67             | 67              |
|                            |             | June         | 17           | 0               | 2            | 0              | 19              |
|                            |             | July         | 0            | 0               | 4            | 0              | 4               |
|                            |             | Aug.         | 1            | 0               | 2            | 0              | 3               |
|                            |             | Nov.         | 16           | 11              | 0            | 0              | 27              |
|                            |             | Dec.         | 3            | 0               | 0            | 1              | 4               |
|                            |             | Total        | 39           | 11              | 8            | 114            | 172             |
|                            | 1961        | Jan.         | 0            | 3               | 0            | 2              | 5               |
| Donald L. Gross            | 1960        | March        | 9            | 0               | 0            | 0              | 9               |
| F. Eugene Hester           | 1961        | May          | 8            | 0               | 0            | 0              | 8               |
| <u>North Dakota:</u>       |             |              |              |                 |              |                |                 |
| Arrowwood NWR              | 1959        | Sept.        | 7            | 0               | 0            | 0              | 7               |
| <u>Ohio:</u>               |             |              |              |                 |              |                |                 |
| Dept. Nat. Resources       | 1959        | Jan.         | 1            | 0               | 0            | 0              | 1               |
|                            |             | April        | 3            | 0               | 0            | 0              | 3               |
|                            |             | May          | 34           | 0               | 0            | 0              | 34              |
|                            |             | June         | 10           | 0               | 103          | 6              | 119             |
|                            |             | July         | 4            | 1               | 144          | 3              | 152             |
|                            |             | Aug.         | 20           | 43              | 7            | 0              | 70              |
|                            |             | Sept.        | 43           | 5               | 0            | 4              | 52              |
|                            |             | Oct.         | 36           | 46              | 0            | 2              | 84              |
|                            |             | Total        | 151          | 95              | 254          | 15             | 515             |

Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Cont'd.).

| State and Permittee  | Year | Month | Adult | Immature | Local | Unknown | All Ages |
|----------------------|------|-------|-------|----------|-------|---------|----------|
| <u>Ohio:</u>         |      |       |       |          |       |         |          |
| Dept. Nat. Resources | 1960 | April | 10    | 0        | 0     | 0       | 10       |
|                      |      | May   | 109   | 0        | 0     | 0       | 109      |
|                      |      | June  | 25    | 34       | 327   | 0       | 386      |
|                      |      | July  | 18    | 5        | 70    | 0       | 93       |
|                      |      | Aug.  | 1     | 2        | 16    | 0       | 19       |
|                      |      | Sept. | 18    | 12       | 0     | 19      | 49       |
|                      |      | Oct.  | 49    | 10       | 0     | 0       | 59       |
|                      |      | Nov.  | 11    | 0        | 0     | 0       | 11       |
|                      |      | Dec.  | 1     | 0        | 0     | 0       | 1        |
|                      |      | Total | 242   | 63       | 413   | 19      | 737      |
|                      | 1961 | April | 14    | 0        | 0     | 0       | 14       |
|                      |      | May   | 1     | 0        | 0     | 0       | 1        |
|                      |      | Total | 15    | 0        | 0     | 0       | 15       |
| Laurel Van Camp      | 1959 | April | 1     | 0        | 0     | 0       | 1        |
|                      |      | May   | 1     | 0        | 0     | 0       | 1        |
|                      |      | June  | 1     | 0        | 0     | 0       | 1        |
|                      |      | Total | 3     | 0        | 0     | 0       | 3        |
|                      | 1960 | May   | 6     | 0        | 0     | 0       | 6        |
|                      |      | June  | 4     | 0        | 0     | 0       | 4        |
|                      |      | Total | 10    | 0        | 0     | 0       | 10       |
|                      | 1961 | May   | 6     | 0        | 0     | 0       | 6        |
| H. R. Dalrymple      | 1959 | May   | 5     | 0        | 0     | 0       | 5        |
|                      | 1960 | May   | 6     | 0        | 0     | 0       | 6        |
|                      | 1961 | May   | 3     | 0        | 0     | 0       | 3        |

Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Cont'd.).

| State and Permittee | Year | Month | Adult | Immature | Local | Unknown | All Ages |
|---------------------|------|-------|-------|----------|-------|---------|----------|
| <u>Ohio:</u>        |      |       |       |          |       |         |          |
| Tim Dilworth        | 1959 | June  | 0     | 0        | 5     | 0       | 5        |
|                     |      | July  | 1     | 0        | 3     | 0       | 4        |
|                     |      | Total | 1     | 0        | 8     | 0       | 9        |
| Jay M. Shepherd     | 1960 | Aug.  | 0     | 0        | 1     | 0       | 1        |
| <u>Ontario:</u>     |      |       |       |          |       |         |          |
| Edward Kroll        | 1959 | Aug.  | 1     | 1        | 0     | 0       | 2        |
|                     |      | Sept. | 6     | 8        | 0     | 0       | 14       |
|                     |      | Oct.  | 1     | 4        | 0     | 0       | 5        |
|                     |      | Total | 8     | 13       | 0     | 0       | 21       |
|                     | 1960 | July  | 0     | 1        | 0     | 0       | 1        |
|                     |      | Aug.  | 8     | 6        | 0     | 0       | 14       |
|                     |      | Sept. | 12    | 12       | 0     | 0       | 24       |
|                     |      | Oct.  | 1     | 1        | 0     | 0       | 2        |
|                     |      | Total | 21    | 20       | 0     | 0       | 41       |
| L. A. Gray          | 1959 | Sept. | 2     | 4        | 0     | 0       | 6        |
|                     |      | Oct.  | 0     | 6        | 0     | 0       | 6        |
|                     |      | Total | 2     | 10       | 0     | 0       | 12       |
| Robert Catton       | 1959 | Sept. | 2     | 8        | 0     | 0       | 10       |
| Robert Stamp        | 1959 | Sept. | 1     | 2        | 0     | 0       | 3        |
| W. C. Baker         | 1960 | July  | 0     | 2        | 0     | 0       | 2        |
| Alfred Bunker       | 1959 | April | 2     | 0        | 0     | 0       | 2        |
| Marshall Field      | 1959 | April | 2     | 0        | 0     | 0       | 2        |

Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Cont'd.).

| State and Permittee   | Year | Month | Adult | Immature | Local | Unknown | All Ages |
|-----------------------|------|-------|-------|----------|-------|---------|----------|
| <u>Oregon:</u>        |      |       |       |          |       |         |          |
| State Game Commission | 1959 | May   | 6     | 0        | 0     | 0       | 6        |
|                       |      | June  | 8     | 0        | 0     | 0       | 8        |
|                       |      | Sept. | 5     | 66       | 0     | 0       | 71       |
|                       |      | Total | 19    | 66       | 0     | 0       | 85       |
|                       | 1960 | May   | 1     | 0        | 0     | 0       | 1        |
|                       |      | Sept. | 2     | 61       | 0     | 0       | 63       |
|                       |      | Oct.  | 23    | 114      | 0     | 0       | 137      |
|                       |      | Total | 26    | 175      | 0     | 0       | 201      |
| <u>Pennsylvania:</u>  |      |       |       |          |       |         |          |
| Paul H. Fluck         | 1959 | April | 2     | 0        | 0     | 0       | 2        |
|                       |      | May   | 2     | 0        | 0     | 0       | 2        |
|                       |      | Aug.  | 0     | 0        | 2     | 0       | 2        |
|                       |      | Sept. | 0     | 14       | 0     | 0       | 14       |
|                       |      | Total | 4     | 14       | 2     | 0       | 20       |
|                       | 1960 | May   | 2     | 0        | 0     | 0       | 2        |
|                       |      | June  | 2     | 0        | 0     | 0       | 2        |
|                       |      | Aug.  | 0     | 7        | 0     | 0       | 7        |
|                       |      | Oct.  | 1     | 4        | 0     | 0       | 5        |
|                       |      | Total | 5     | 11       | 0     | 0       | 16       |
| S. T. Miller          | 1959 | June  | 2     | 0        | 0     | 0       | 2        |
|                       |      | Sept. | 2     | 0        | 0     | 0       | 2        |
|                       |      | Total | 4     | 0        | 0     | 0       | 4        |
| State Game Commission | 1959 | Sept. | 1     | 2        | 0     | 0       | 3        |
| Robert C. Leberman    | 1960 | Dec.  | 0     | 0        | 0     | 1       | 1        |

Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Cont'd.).

| State and Permittee          | Year | Month | Adult | Immature | Local | Unknown | All Ages |
|------------------------------|------|-------|-------|----------|-------|---------|----------|
| <u>Prince Edward Island:</u> |      |       |       |          |       |         |          |
| C. O. Bartlett               | 1959 | July  | 1     | 0        | 0     | 0       | 1        |
|                              | 1960 | July  | 1     | 0        | 0     | 0       | 1        |
| <u>Quebec:</u>               |      |       |       |          |       |         |          |
| Gaston Moisan                | 1960 | Aug.  | 0     | 2        | 0     | 0       | 2        |
| <u>Rhode Island:</u>         |      |       |       |          |       |         |          |
| Div. of Fish & Game          | 1960 | April | 4     | 0        | 0     | 0       | 4        |
|                              |      | May   | 28    | 0        | 0     | 0       | 28       |
|                              |      | June  | 24    | 0        | 0     | 0       | 24       |
|                              |      | Aug.  | 2     | 13       | 0     | 0       | 15       |
|                              |      | Sept. | 1     | 4        | 0     | 0       | 5        |
|                              |      | Total | 59    | 17       | 0     | 0       | 76       |
| <u>South Carolina:</u>       |      |       |       |          |       |         |          |
| William C. Lehmann           | 1960 | April | 6     | 0        | 0     | 0       | 6        |
|                              |      | May   | 92    | 0        | 0     | 0       | 92       |
|                              |      | June  | 66    | 0        | 0     | 0       | 66       |
|                              |      | July  | 17    | 0        | 0     | 0       | 17       |
|                              |      | Aug.  | 60    | 10       | 0     | 0       | 70       |
|                              |      | Sept. | 2     | 0        | 0     | 0       | 2        |
|                              |      | Total | 243   | 10       | 0     | 0       | 253      |
| Santee NWR                   | 1960 | June  | 17    | 2        | 0     | 0       | 19       |
|                              |      | July  | 39    | 5        | 0     | 0       | 44       |
|                              |      | Total | 56    | 7        | 0     | 0       | 63       |
| R. G. MacFarlan              | 1961 | Jan.  | 0     | 0        | 0     | 6       | 6        |

Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Cont'd.).

| State and Permittee    | Year | Month | Adult | Immature | Local | Unknown | All Ages |
|------------------------|------|-------|-------|----------|-------|---------|----------|
| <u>South Dakota:</u>   |      |       |       |          |       |         |          |
| Sand Lake NWR          | 1959 | Aug.  | 0     | 1        | 0     | 0       | 1        |
| <u>Tennessee:</u>      |      |       |       |          |       |         |          |
| Dept. Conservation     | 1959 | March | 1     | 0        | 0     | 0       | 1        |
|                        |      | April | 8     | 0        | 0     | 0       | 8        |
|                        |      | July  | 1     | 0        | 14    | 0       | 15       |
|                        |      | Aug.  | 2     | 0        | 21    | 0       | 23       |
|                        |      | Sept. | 0     | 1        | 3     | 71      | 75       |
|                        |      | Oct.  | 16    | 23       | 0     | 0       | 39       |
|                        |      | Nov.  | 21    | 22       | 0     | 0       | 43       |
|                        |      | Total | 49    | 46       | 38    | 71      | 204      |
|                        | 1960 | Aug.  | 0     | 0        | 1     | 70      | 71       |
|                        |      | Sept. | 4     | 9        | 5     | 51      | 69       |
|                        |      | Oct.  | 3     | 14       | 0     | 5       | 22       |
|                        |      | Total | 7     | 23       | 6     | 126     | 162      |
|                        | 1961 | April | 7     | 0        | 0     | 0       | 7        |
| <u>Reelfoot NWR</u>    | 1959 | Aug.  | 1     | 45       | 6     | 0       | 52       |
|                        |      | Sept. | 72    | 24       | 0     | 0       | 96       |
|                        |      | Oct.  | 3     | 1        | 0     | 0       | 4        |
|                        |      | Total | 76    | 70       | 6     | 0       | 152      |
| James T. Hammond       | 1961 | Feb.  | 34    | 0        | 0     | 0       | 34       |
| <u>Utah:</u>           |      |       |       |          |       |         |          |
| Fish & Game Commission | 1959 | Sept. | 0     | 1        | 0     | 0       | 1        |

Continued

Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Continued).

| State and Permittee | Year | Month | Adult | Immature | Local | Unknown | All Ages |
|---------------------|------|-------|-------|----------|-------|---------|----------|
| <b>Vermont:</b>     |      |       |       |          |       |         |          |
| Fish & Game Service | 1959 | April | 2     | 0        | 0     | 0       | 2        |
|                     |      | May   | 12    | 0        | 0     | 0       | 12       |
|                     |      | June  | 10    | 0        | 0     | 0       | 10       |
|                     |      | July  | 2     | 0        | 0     | 0       | 2        |
|                     |      | Aug.  | 6     | 31       | 5     | 0       | 42       |
|                     |      | Sept. | 93    | 152      | 11    | 0       | 256      |
|                     |      | Total | 125   | 183      | 16    | 0       | 324      |
|                     | 1960 | May   | 12    | 0        | 0     | 0       | 12       |
|                     |      | June  | 20    | 0        | 0     | 0       | 20       |
|                     |      | Aug.  | 11    | 115      | 14    | 0       | 140      |
|                     |      | Sept. | 52    | 160      | 1     | 0       | 213      |
|                     |      | Oct.  | 3     | 1        | 0     | 0       | 4        |
|                     |      | Total | 98    | 276      | 15    | 0       | 389      |
| Missisquoi NWR      | 1960 | May   | 10    | 0        | 0     | 0       | 10       |
|                     |      | Aug.  | 59    | 194      | 0     | 0       | 253      |
|                     |      | Sept. | 83    | 104      | 0     | 0       | 187      |
|                     |      | Total | 152   | 298      | 0     | 0       | 450      |
| <b>Virginia:</b>    |      |       |       |          |       |         |          |
| Arthur H. Fast      | 1960 | Aug.  | 0     | 28       | 0     | 0       | 28       |
| <b>Washington:</b>  |      |       |       |          |       |         |          |
| Dept. of Game       | 1959 | Feb.  | 2     | 0        | 0     | 0       | 2        |
|                     |      | July  | 2     | 0        | 2     | 0       | 4        |
|                     |      | Aug.  | 0     | 3        | 1     | 0       | 4        |
|                     |      | Sept. | 1     | 1        | 0     | 0       | 2        |
|                     |      | Total | 5     | 4        | 3     | 0       | 12       |

Continued-----

Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Continued).

| State and Permittee   | Year | Month | Adult | Immature | Local | Unknown | All Ages |
|-----------------------|------|-------|-------|----------|-------|---------|----------|
| <u>Washington:</u>    |      |       |       |          |       |         |          |
| Dept. of Game         | 1960 | April | 38    | 0        | 0     | 0       | 38       |
|                       |      | May   | 12    | 0        | 0     | 0       | 12       |
|                       |      | June  | 0     | 0        | 1     | 0       | 1        |
|                       |      | July  | 2     | 0        | 1     | 0       | 3        |
|                       |      | Total | 52    | 0        | 2     | 0       | 54       |
| Willapa NWR           | 1960 | Aug.  | 0     | 0        | 0     | 14      | 14       |
| McNary NWR            | 1960 | Aug.  | 0     | 1        | 0     | 0       | 1        |
|                       |      | Sept. | 1     | 2        | 0     | 0       | 3        |
|                       |      | Total | 1     | 3        | 0     | 0       | 4        |
| Columbia NWA          | 1960 | Sept. | 0     | 2        | 0     | 0       | 2        |
| <u>West Virginia:</u> |      |       |       |          |       |         |          |
| Conservation Comm.    | 1959 | March | 25    | 0        | 0     | 0       | 25       |
|                       |      | April | 39    | 0        | 0     | 0       | 39       |
|                       |      | June  | 2     | 4        | 20    | 0       | 26       |
|                       |      | July  | 16    | 70       | 23    | 0       | 109      |
|                       |      | Aug.  | 2     | 64       | 1     | 0       | 67       |
|                       |      | Oct.  | 2     | 4        | 0     | 0       | 6        |
|                       |      | Total | 86    | 142      | 44    | 0       | 272      |
|                       | 1960 | March | 6     | 0        | 0     | 0       | 6        |
|                       |      | April | 20    | 0        | 0     | 0       | 20       |
|                       |      | June  | 1     | 0        | 30    | 0       | 31       |
|                       |      | July  | 0     | 1        | 6     | 0       | 7        |
|                       |      | Aug.  | 1     | 2        | 0     | 0       | 3        |
|                       |      | Sept. | 2     | 18       | 0     | 0       | 20       |
|                       |      | Oct.  | 6     | 23       | 0     | 0       | 29       |
|                       |      | Total | 36    | 44       | 36    | 0       | 116      |
| Alan W. Souder        | 1959 | Feb.  | 1     | 0        | 0     | 0       | 1        |

Table 1. Summary of Wood Duck Banding, 1959 through Spring, 1961 (Continued).

| State and Permittee   | Year | Month | Adult | Immature | Local | Unknown | All Ages |
|-----------------------|------|-------|-------|----------|-------|---------|----------|
| <u>Wisconsin:</u>     |      |       |       |          |       |         |          |
| Upper Miss. River NWR | 1959 | June  | 0     | 0        | 10    | 0       | 10       |
|                       |      | July  | 0     | 0        | 12    | 1       | 13       |
|                       |      | Aug.  | 34    | 250      | 0     | 0       | 284      |
|                       |      | Sept. | 129   | 357      | 0     | 0       | 486      |
|                       |      | Total | 163   | 607      | 22    | 1       | 793      |
|                       | 1960 | June  | 1     | 0        | 6     | 0       | 7        |
|                       |      | July  | 6     | 0        | 43    | 0       | 49       |
|                       |      | Aug.  | 213   | 1,066    | 72    | 4       | 1,355    |
|                       |      | Sept. | 138   | 375      | 0     | 6       | 519      |
|                       |      | Oct.  | 11    | 13       | 0     | 0       | 24       |
|                       |      | Total | 369   | 1,454    | 121   | 10      | 1,954    |
|                       | 1961 | April | 1     | 0        | 0     | 0       | 1        |
|                       |      | May   | 1     | 0        | 0     | 0       | 1        |
|                       |      | Total | 2     | 0        | 0     | 0       | 1/2      |
| Needah NWR            | 1959 | Aug.  | 9     | 2        | 0     | 0       | 11       |
|                       |      | Sept. | 56    | 3        | 0     | 0       | 59       |
|                       |      | Total | 65    | 5        | 0     | 0       | 70       |
|                       | 1960 | Aug.  | 74    | 46       | 2     | 1       | 123      |
|                       |      | Sept. | 75    | 43       | 0     | 0       | 118      |
|                       |      | Nov.  | 0     | 1        | 0     | 0       | 1        |
|                       |      | Total | 149   | 90       | 2     | 1       | 242      |
| Horicon NWR           | 1959 | Sept. | 13    | 0        | 0     | 0       | 13       |
|                       |      | Oct.  | 1     | 0        | 0     | 0       | 1        |
|                       |      | Total | 14    | 0        | 0     | 0       | 14       |
|                       | 1960 | July  | 28    | 3        | 0     | 0       | 31       |
|                       |      | Aug.  | 19    | 1        | 0     | 0       | 20       |
|                       |      | Oct.  | 0     | 1        | 0     | 0       | 1        |
|                       |      | Total | 47    | 5        | 0     | 0       | 52       |
| Dept. of Conservation | 1959 | Sept. | 17    | 26       | 0     | 0       | 43       |

Table 2. Summary of Wood Duck Direct Recovery Rates for June-October Bandings, 1959-1960.\*

| State of Banding     | Year Banded | Number Banded |       |      | Number Recovered |      |      | Direct Recovery Rate |        |        |
|----------------------|-------------|---------------|-------|------|------------------|------|------|----------------------|--------|--------|
|                      |             | Ad.           | Imm.  | Loc. | Ad.              | Imm. | Loc. | Ad.                  | Imm.   | Loc.   |
| <u>Oregon</u>        | 1959        | -             | -     | 14   | -                | -    | 0    | -                    | -      | (0.0)  |
|                      | 1960        | -             | -     | 72   | -                | -    | 6    | -                    | -      | 4.6    |
| <u>Manitoba</u>      | 1959        | 50            | -     | -    | 0                | -    | -    | 0.0                  | -      | -      |
|                      | 1960        | 26            | -     | -    | 0                | -    | -    | (0.0)                | -      | -      |
| <u>Minnesota</u>     | 1959        | 185           | 375   | 81   | 13               | 31   | 8    | 7.0                  | 8.3    | 9.9    |
|                      | 1960        | 87            | 108   | 35   | 8                | 10   | 1    | 9.2                  | 9.2    | (2.8)  |
| <u>Wisconsin</u>     | 1959        | 258           | 638   | 22   | 16               | 52   | 1    | 6.2                  | 8.2    | 4.5    |
|                      | 1960        | 554           | 1,534 | 123  | 35               | 151  | 15   | 6.3                  | 9.8    | 12.2   |
| <u>Michigan</u>      | 1959        | 183           | 185   | 126  | 17               | 22   | 8    | 9.3                  | 11.9   | 6.3    |
|                      | 1960        | 127           | 204   | 45   | 5                | 18   | 3    | 3.9                  | 8.8    | (6.7)  |
| <u>New York</u>      | 1958        | 53            | 456   | -    | 4                | 41   | -    | 7.5                  | 9.0    | -      |
|                      | 1959        | 130           | 199   | 95   | 2                | 11   | 5    | 1.5                  | 5.5    | 5.3    |
|                      | 1960        | 160           | 496   | 3    | 7                | 39   | 1    | 4.4                  | 7.9    | (33.3) |
| <u>Vermont</u>       | 1958        | 73            | 274   | 47   | 11               | 37   | 6    | 15.1                 | 13.5   | (12.8) |
|                      | 1959        | 111           | 183   | 16   | 9                | 22   | 1    | 8.1                  | 12.2   | (6.2)  |
|                      | 1960        | 225           | 573   | 15   | 17               | 53   | 0    | 7.6                  | 9.2    | (0.0)  |
| <u>N. Hampshire</u>  | 1959        | -             | 39    | -    | -                | 1    | -    | -                    | (2.6)  | -      |
|                      | 1960        | -             | 40    | -    | -                | 0    | -    | -                    | (0.0)  | -      |
| <u>Massachusetts</u> | 1959        | 35            | 9     | -    | 0                | 1    | -    | (0.0)                | (11.1) | -      |
|                      | 1960        | 50            | 59    | -    | 0                | 4    | -    | 0.0                  | 6.8    | -      |
| <u>Ohio</u>          | 1959        | 79            | 49    | 262  | 6                | 4    | 11   | 7.6                  | (8.2)  | 4.2    |
|                      | 1960        | 66            | 53    | 414  | 0                | 2    | 5    | 0.0                  | 3.8    | 1.2    |
| <u>Indiana</u>       | 1959        | 128           | 97    | 23   | 4                | 2    | 1    | 3.1                  | 2.1    | (4.3)  |
|                      | 1960        | 436           | 294   | 70   | 22               | 23   | 0    | 5.0                  | 7.8    | 0.0    |
| <u>Illinois</u>      | 1959        | 71            | 266   | -    | 6                | 8    | -    | 8.4                  | 3.0    | -      |
|                      | 1960        | 132           | 904   | -    | 5                | 60   | -    | 3.8                  | 6.6    | -      |
| <u>Iowa</u>          | 1959        | 45            | 178   | 18   | 2                | 13   | 1    | (4.4)                | 7.3    | (5.6)  |
|                      | 1960        | 41            | 445   | 110  | 3                | 42   | 6    | (7.3)                | 9.4    | 5.4    |
| <u>Missouri</u>      | 1959        | 122           | 330   | 51   | 6                | 21   | 1    | 4.9                  | 6.4    | 2.0    |
|                      | 1960        | 195           | 187   | 26   | 8                | 6    | 3    | 4.1                  | 3.2    | (11.5) |

Continued-----

Table 2. Summary of Wood Duck Direct Recovery Rates for June-October Bandings, 1959-1960 (Continued).

| State of Banding      | Year Banded | Number Banded |      |      | Number Recovered |      |      | Direct Recovery Rate |        |       |
|-----------------------|-------------|---------------|------|------|------------------|------|------|----------------------|--------|-------|
|                       |             | Ad.           | Imm. | Loc. | Ad.              | Imm. | Loc. | Ad.                  | Imm.   | Loc.  |
| <u>West Virginia</u>  | 1959        | -             | 142  | 44   | -                | 5    | 1    | -                    | 3.5    | (2.3) |
|                       | 1960        | -             | 44   | 36   | -                | 4    | 3    | -                    | (9.1)  | (8.3) |
| <u>Tennessee</u>      | 1959        | 19            | 24   | 38   | 0                | 6    | 2    | (0.0)                | (25.0) | (5.3) |
|                       | 1960        | 83            | 90   | 12   | 2                | 1    | 0    | 2.4                  | 1.4    | (0.0) |
| <u>Louisiana</u>      | 1959        | 22            | 316  | 52   | 1                | 21   | 0    | (4.5)                | 6.6    | (0.0) |
|                       | 1960        | 109           | 162  | 16   | 0                | 9    | 0    | 0.0                  | 5.6    | (0.0) |
| <u>Alabama</u>        | 1959        | -             | -    | 14   | -                | -    | 0    | -                    | -      | (0.0) |
|                       | 1960        | -             | -    | 72   | -                | -    | 6    | -                    | -      | 8.3   |
| <u>South Carolina</u> | 1959        | 5             | -    | -    | 0                | -    | -    | (0.0)                | -      | -     |
|                       | 1960        | 201           | -    | -    | 7                | -    | -    | 3.5                  | -      | -     |

\* See text for detailed notes concerning data used in Table 2.

Table 3. Direct Recovery Distribution of Atlantic Flyway Wood Ducks Banded during June-December, 1959 and 1960.

| State of Recovery | STATE OF BANDING |          |          |          |          |          |               |          |          |              |          |          |              |          |          |          |           |           |          |
|-------------------|------------------|----------|----------|----------|----------|----------|---------------|----------|----------|--------------|----------|----------|--------------|----------|----------|----------|-----------|-----------|----------|
|                   | Florida          |          |          | Maine    |          |          | Massachusetts |          |          | N. Brunswick |          |          | N. Hampshire |          |          | New York |           |           |          |
|                   | Ad.              | Imm.     | Loc.     |          | Ad.      | Imm.     | Loc.          |          | Ad.      | Imm.         | Loc.     |          | Ad.          | Imm.     | Loc.     |          | Ad.       | Imm.      | Loc.     |
| Alabama           | 0                | 0        | -*       | 0        | 0        | 0        | 0             | 0        | -        | 0            | 0        | -        | 0            | 0        | 0        | 1        | 0         | 0         |          |
| Florida           | 0                | 2        | -        | 0        | 0        | 0        | 0             | 0        | -        | 0            | 0        | -        | 0            | 0        | 0        | 0        | 5         | 0         |          |
| Georgia           | 0                | 0        | -        | 0        | 0        | 0        | 0             | 1        | -        | 0            | 0        | -        | 0            | 0        | 0        | 0        | 3         | 0         |          |
| Maine             | 0                | 0        | -        | 1        | 0        | 0        | 0             | 0        | -        | 0            | 0        | -        | 0            | 0        | 0        | 0        | 0         | 0         |          |
| Massachusetts     | 0                | 0        | -        | 0        | 0        | 0        | 0             | 2        | -        | 0            | 0        | -        | 0            | 0        | 0        | 0        | 0         | 0         |          |
| Mississippi       | 0                | 0        | -        | 2        | 0        | 0        | 0             | 0        | -        | 0            | 0        | -        | 0            | 0        | 0        | 0        | 1         | 0         |          |
| New York          | 0                | 0        | -        | 0        | 0        | 0        | 0             | 0        | -        | 0            | 0        | -        | 0            | 1        | 0        | 3        | 22        | 6         |          |
| N. Carolina       | 0                | 0        | -        | 1        | 0        | 0        | 0             | 1        | -        | 0            | 0        | -        | 0            | 0        | 0        | 4        | 3         | 0         |          |
| Ontario           | 0                | 0        | -        | 0        | 0        | 0        | 0             | 0        | -        | 0            | 0        | -        | 0            | 0        | 0        | 2        | 9         | 0         |          |
| Pennsylvania      | 0                | 0        | -        | 0        | 0        | 0        | 0             | 0        | -        | 0            | 0        | -        | 0            | 0        | 0        | 0        | 2         | 0         |          |
| S. Carolina       | 0                | 0        | -        | 0        | 0        | 0        | 0             | 1        | -        | 0            | 0        | -        | 0            | 0        | 0        | 0        | 8         | 0         |          |
| Tennessee         | 0                | 0        | -        | 1        | 0        | 0        | 0             | 0        | -        | 0            | 0        | -        | 0            | 0        | 0        | 0        | 1         | 0         |          |
| Texas             | 0                | 0        | -        | 0        | 0        | 0        | 0             | 0        | -        | 0            | 0        | -        | 0            | 0        | 0        | 0        | 1         | 0         |          |
| Vermont           | 0                | 0        | -        | 0        | 0        | 0        | 0             | 0        | -        | 0            | 0        | -        | 1            | 0        | 0        | 0        | 0         | 0         |          |
| Virginia          | 0                | 0        | -        | 0        | 0        | 0        | 0             | 0        | -        | 1            | 0        | -        | 0            | 0        | 0        | 0        | 2         | 0         |          |
| W. Virginia       | 0                | 0        | -        | 0        | 0        | 0        | 0             | 0        | -        | 0            | 0        | -        | 0            | 0        | 0        | 0        | 1         | 0         |          |
| <b>TOTAL</b>      | <b>0</b>         | <b>2</b> | <b>-</b> | <b>5</b> | <b>0</b> | <b>0</b> | <b>0</b>      | <b>0</b> | <b>5</b> | <b>-</b>     | <b>1</b> | <b>0</b> | <b>-</b>     | <b>1</b> | <b>1</b> | <b>0</b> | <b>10</b> | <b>58</b> | <b>6</b> |

Continued

Table 3. Direct Recovery Distribution of Atlantic Flyway Wood Ducks Banded during June-December, 1959 and 1960.

| State of Recovery | STATE OF BANDING |      |      |              |      |      |             |      |      |         |      |      | Total    |      |      |             |      |      |     |   |
|-------------------|------------------|------|------|--------------|------|------|-------------|------|------|---------|------|------|----------|------|------|-------------|------|------|-----|---|
|                   | N. Carolina      |      |      | Rhode Island |      |      | S. Carolina |      |      | Vermont |      |      | Virginia |      |      | W. Virginia |      |      |     |   |
|                   | Ad.              | Imm. | Loc. | Ad.          | Imm. | Loc. | Ad.         | Imm. | Loc. | Ad.     | Imm. | Loc. | Ad.      | Imm. | Loc. | Ad.         | Imm. | Loc. |     |   |
| Alabama           | 1                | 0    | 0    | 0            | 0    | 0    | —           | 0    | 0    | —       | 0    | 1    | 0        | —    | 0    | —           | 1    | 2    | 0   | 6 |
| Florida           | 0                | 0    | 0    | 0            | 0    | —    | 1           | 0    | —    | 2       | 3    | 0    | —        | 0    | —    | 0           | 0    | 0    | 13  |   |
| Georgia           | 0                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 2       | 2    | 0    | —        | 0    | —    | 0           | 0    | 0    | 8   |   |
| Illinois          | 0                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 0       | 1    | 0    | —        | 0    | —    | 0           | 0    | 0    | 1   |   |
| Louisiana         | 0                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 0       | 0    | 0    | —        | 0    | —    | 0           | 1    | 0    | 1   |   |
| Maine             | 0                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 0       | 0    | 0    | —        | 0    | —    | 0           | 0    | 0    | 1   |   |
| Maryland          | 0                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 0       | 1    | 0    | —        | 0    | —    | 0           | 0    | 0    | 1   |   |
| Massachusetts     | 0                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 0       | 0    | 0    | —        | 0    | —    | 0           | 0    | 0    | 2   |   |
| Mississippi       | 1                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 0       | 1    | 0    | —        | 0    | —    | 0           | 1    | 0    | 6   |   |
| Missouri          | 0                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 0       | 1    | 0    | —        | 0    | —    | 0           | 0    | 0    | 1   |   |
| New Jersey        | 0                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 0       | 2    | 0    | —        | 0    | —    | 0           | 0    | 0    | 2   |   |
| New York          | 0                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 0       | 1    | 0    | —        | 0    | —    | 0           | 0    | 0    | 33  |   |
| N. Carolina       | 1                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 0       | 5    | 0    | —        | 0    | —    | 0           | 0    | 0    | 15  |   |
| Ohio              | 1                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 0       | 0    | 0    | —        | 0    | —    | 0           | 0    | 0    | 1   |   |
| Ontario           | 0                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 1       | 0    | 0    | —        | 0    | —    | 0           | 0    | 0    | 12  |   |
| Pennsylvania      | 0                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 1       | 0    | 0    | —        | 0    | —    | 0           | 0    | 0    | 3   |   |
| Quebec            | 0                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 8       | 12   | 0    | —        | 0    | —    | 0           | 0    | 0    | 20  |   |
| S. Carolina       | 1                | 0    | 0    | 1            | 1    | —    | 6           | 2    | —    | 2       | 4    | 0    | —        | 1    | —    | 0           | 1    | 0    | 28  |   |
| Tennessee         | 0                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 0       | 2    | 0    | —        | 0    | —    | 0           | 0    | 0    | 4   |   |
| Texas             | 0                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 0       | 0    | 0    | —        | 0    | —    | 0           | 0    | 0    | 1   |   |
| Vermont           | 0                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 10      | 39   | 5    | —        | 0    | —    | 0           | 0    | 0    | 55  |   |
| Virginia          | 0                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 0       | 0    | 0    | —        | 1    | —    | 0           | 0    | 0    | 4   |   |
| W. Virginia       | 0                | 0    | 0    | 0            | 0    | —    | 0           | 0    | —    | 0       | 0    | 0    | —        | 1    | —    | 0           | 4    | 4    | 10  |   |
| <b>TOTAL</b>      | 5                | 0    | 0    | 1            | 1    | —    | 7           | 2    | —    | 26      | 75   | 5    | —        | 3    | —    | 1           | 9    | 4    | 228 |   |

\* None banded during period.

Table 4. Direct Recovery Distribution of Mississippi Flyway Wood Ducks Banded during June-December, 1959 and 1960.

| State of Recovery | STATE OF BANDING |          |          |           |           |      |           |           |          |          |           |          |           |           |          |           |           |           |
|-------------------|------------------|----------|----------|-----------|-----------|------|-----------|-----------|----------|----------|-----------|----------|-----------|-----------|----------|-----------|-----------|-----------|
|                   | Alabama          |          |          | Illinois  |           |      | Indiana   |           |          | Iowa     |           |          | Louisiana |           |          | Michigan  |           |           |
|                   | Ad.              | Imm.     | Loc.     | Ad.       | Imm.      | Loc. | Ad.       | Imm.      | Loc.     | Ad.      | Imm.      | Loc.     | Ad.       | Imm.      | Loc.     | Ad.       | Imm.      | Loc.      |
| Alabama           | 0                | 1        | 4        | 0         | 0         | --   | 1         | 2         | 0        | 0        | 0         | 0        | 0         | 0         | 0        | 1         | 1         | 0         |
| Arkansas          | 0                | 0        | 0        | 1         | 12        | --   | 1         | 0         | 1        | 1        | 2         | 0        | 0         | 1         | 0        | 2         | 3         | 1         |
| Florida           | 0                | 0        | 0        | 1         | 0         | --   | 0         | 1         | 0        | 0        | 0         | 0        | 0         | 0         | 0        | 2         | 1         | 0         |
| Georgia           | 0                | 0        | 0        | 0         | 0         | --   | 1         | 0         | 0        | 0        | 0         | 0        | 0         | 0         | 0        | 1         | 0         | 1         |
| Illinois          | 0                | 0        | 0        | 0         | 21        | --   | 3         | 1         | 0        | 0        | 2         | 1        | 0         | 0         | 0        | 0         | 1         | 0         |
| Indiana           | 0                | 0        | 0        | 0         | 0         | --   | 7         | 14        | 0        | 0        | 0         | 0        | 0         | 0         | 0        | 0         | 2         | 1         |
| Iowa              | 0                | 0        | 0        | 1         | 0         | --   | 0         | 0         | 0        | 1        | 17        | 2        | 0         | 0         | 0        | 0         | 0         | 0         |
| Kansas            | 0                | 0        | 0        | 0         | 0         | --   | 0         | 0         | 0        | 0        | 0         | 1        | 0         | 0         | 0        | 0         | 0         | 0         |
| Kentucky          | 0                | 0        | 0        | 0         | 0         | --   | 0         | 1         | 0        | 0        | 0         | 0        | 0         | 0         | 0        | 0         | 0         | 0         |
| Louisiana         | 0                | 0        | 0        | 3         | 16        | --   | 5         | 2         | 0        | 1        | 6         | 1        | 4         | 35        | 0        | 5         | 5         | 1         |
| Michigan          | 0                | 0        | 0        | 0         | 0         | --   | 0         | 0         | 0        | 0        | 0         | 0        | 0         | 0         | 0        | 7         | 26        | 5         |
| Minnesota         | 0                | 0        | 0        | 1         | 1         | --   | 0         | 0         | 0        | 1        | 0         | 0        | 0         | 0         | 0        | 0         | 0         | 0         |
| Mississippi       | 0                | 0        | 2        | 2         | 7         | --   | 5         | 3         | 0        | 0        | 3         | 0        | 0         | 0         | 0        | 0         | 2         | 2         |
| Missouri          | 0                | 0        | 0        | 0         | 2         | --   | 1         | 0         | 0        | 0        | 2         | 0        | 0         | 0         | 0        | 0         | 0         | 0         |
| N. Carolina       | 0                | 0        | 0        | 0         | 0         | --   | 0         | 0         | 0        | 0        | 0         | 0        | 0         | 0         | 0        | 1         | 0         | 0         |
| Oklahoma          | 0                | 0        | 0        | 0         | 0         | --   | 1         | 1         | 0        | 0        | 2         | 1        | 0         | 0         | 0        | 0         | 0         | 0         |
| Ontario           | 0                | 0        | 0        | 0         | 0         | --   | 0         | 1         | 0        | 0        | 0         | 0        | 0         | 0         | 0        | 2         | 0         | 0         |
| S. Carolina       | 0                | 0        | 0        | 0         | 0         | --   | 0         | 0         | 0        | 0        | 1         | 0        | 0         | 0         | 0        | 1         | 0         | 0         |
| Tennessee         | 0                | 0        | 0        | 0         | 2         | --   | 1         | 0         | 0        | 0        | 0         | 0        | 0         | 0         | 0        | 0         | 0         | 0         |
| Texas             | 0                | 0        | 0        | 1         | 9         | --   | 1         | 1         | 0        | 0        | 5         | 0        | 0         | 3         | 0        | 0         | 0         | 0         |
| Wisconsin         | 0                | 0        | 0        | 2         | 1         | --   | 0         | 1         | 0        | 1        | 17        | 1        | 0         | 0         | 0        | 1         | 0         | 0         |
| <b>TOTAL</b>      | <b>0</b>         | <b>1</b> | <b>6</b> | <b>12</b> | <b>72</b> |      | <b>27</b> | <b>28</b> | <b>1</b> | <b>5</b> | <b>57</b> | <b>7</b> | <b>4</b>  | <b>39</b> | <b>0</b> | <b>23</b> | <b>41</b> | <b>11</b> |

(Continued)

Table 4. Direct Recovery Distribution of Mississippi Flyway Wood Ducks Banded during June-December, 1959 and 1960.

| State of Recovery | Minnesota |      |      | Missouri |      |      | Ohio |      |      | Tennessee |      |      | Wisconsin |      |      | Total |
|-------------------|-----------|------|------|----------|------|------|------|------|------|-----------|------|------|-----------|------|------|-------|
|                   | Ad.       | Imm. | Loc. | Ad.      | Imm. | Loc. | Ad.  | Imm. | Loc. | Ad.       | Imm. | Loc. | Ad.       | Imm. | Loc. |       |
| Alabama           | 2         | 1    | 1    | 0        | 1    | 0    | 3    | 0    | 1    | 1         | 2    | 1    | 4         | 1    | 0    | 28    |
| Arkansas          | 3         | 2    | 0    | 3        | 6    | 1    | 0    | 0    | 1    | 1         | 0    | 0    | 5         | 14   | 1    | 62    |
| Florida           | 0         | 0    | 0    | 0        | 0    | 0    | 0    | 0    | 1    | 0         | 0    | 0    | 2         | 0    | 0    | 8     |
| Georgia           | 0         | 0    | 0    | 0        | 0    | 0    | 1    | 3    | 0    | 0         | 0    | 0    | 0         | 0    | 0    | 7     |
| Illinois          | 1         | 1    | 2    | 2        | 1    | 0    | 0    | 0    | 0    | 0         | 0    | 0    | 0         | 10   | 1    | 48    |
| Indiana           | 1         | 0    | 0    | 0        | 0    | 0    | 0    | 0    | 0    | 0         | 0    | 0    | 0         | 0    | 0    | 25    |
| Iowa              | 2         | 1    | 0    | 0        | 0    | 0    | 0    | 0    | 0    | 0         | 0    | 0    | 3         | 20   | 0    | 47    |
| Kansas            | 0         | 0    | 0    | 0        | 0    | 0    | 0    | 0    | 0    | 0         | 0    | 0    | 0         | 3    | 0    | 4     |
| Kentucky          | 0         | 0    | 0    | 0        | 0    | 0    | 0    | 0    | 0    | 0         | 0    | 0    | 0         | 0    | 0    | 1     |
| Louisiana         | 3         | 8    | 2    | 7        | 2    | 0    | 0    | 2    | 0    | 0         | 2    | 0    | 6         | 21   | 5    | 142   |
| Michigan          | 0         | 1    | 0    | 0        | 0    | 0    | 0    | 0    | 0    | 0         | 0    | 0    | 0         | 1    | 0    | 40    |
| Minnesota         | 5         | 23   | 3    | 0        | 0    | 0    | 0    | 0    | 0    | 0         | 0    | 0    | 2         | 19   | 3    | 58    |
| Mississippi       | 4         | 0    | 0    | 1        | 0    | 1    | 1    | 0    | 0    | 0         | 2    | 1    | 2         | 8    | 0    | 46    |
| Missouri          | 0         | 1    | 0    | 2        | 8    | 2    | 0    | 0    | 0    | 0         | 0    | 0    | 1         | 4    | 0    | 23    |
| Nebraska          | 0         | 0    | 0    | 0        | 0    | 0    | 0    | 0    | 0    | 0         | 0    | 0    | 0         | 1    | 0    | 1     |
| N. Carolina       | 0         | 0    | 0    | 0        | 0    | 0    | 0    | 0    | 1    | 0         | 0    | 0    | 0         | 0    | 0    | 2     |
| Ohio              | 0         | 0    | 0    | 0        | 0    | 0    | 5    | 7    | 10   | 0         | 0    | 0    | 1         | 1    | 1    | 25    |
| Oklahoma          | 0         | 1    | 0    | 1        | 3    | 0    | 0    | 0    | 0    | 0         | 0    | 0    | 0         | 1    | 0    | 11    |
| Ontario           | 0         | 0    | 0    | 0        | 0    | 0    | 0    | 0    | 0    | 0         | 0    | 0    | 0         | 2    | 0    | 5     |
| S. Carolina       | 0         | 0    | 0    | 0        | 0    | 0    | 0    | 0    | 0    | 0         | 0    | 0    | 0         | 1    | 0    | 3     |
| Tennessee         | 0         | 0    | 0    | 0        | 1    | 0    | 0    | 1    | 1    | 1         | 2    | 0    | 1         | 1    | 0    | 11    |
| Texas             | 0         | 0    | 1    | 2        | 7    | 0    | 0    | 0    | 1    | 0         | 0    | 0    | 4         | 13   | 1    | 49    |
| Wisconsin         | 1         | 6    | 0    | 0        | 0    | 0    | 0    | 0    | 0    | 0         | 0    | 0    | 20        | 83   | 4    | 138   |
| <b>TOTAL</b>      | 22        | 45   | 9    | 18       | 29   | 4    | 10   | 13   | 16   | 3         | 8    | 2    | 51        | 204  | 16   | 784   |

Table 5. Relative Recovery Rate Estimate Based on Banding Data Summarized in Table 2. - All Years Combined.

| State of<br>Banding | Number<br>Banded |          | Direct<br>Recovery Rate |          | Relative<br>Recovery Rate |
|---------------------|------------------|----------|-------------------------|----------|---------------------------|
|                     | Adult            | Immature | Adult                   | Immature |                           |
| Minnesota           | 272              | 483      | 7.7                     | 8.5      | 1.1                       |
| Wisconsin           | 812              | 2,172    | 6.3                     | 8.0      | 1.3                       |
| Michigan            | 310              | 389      | 7.1                     | 10.3     | 1.5                       |
| New York            | 343              | 1,151    | 3.8                     | 7.9      | 2.1                       |
| Vermont             | 409              | 1,030    | 10.3                    | 11.6     | 1.1                       |
| Ohio                | 145              | 102      | 4.1                     | 5.9      | 1.4                       |
| Indiana             | 564              | 391      | 4.6                     | 6.4      | 1.4                       |
| Illinois            | 203              | 1,170    | 5.4                     | 5.8      | 1.1                       |
| Iowa                | 86               | 623      | 5.8                     | 8.8      | 1.5                       |
| Missouri            | 317              | 517      | 4.4                     | 5.2      | 1.2                       |
| Louisiana           | 131              | 478      | 0.8                     | 6.3      | <u>7.9</u>                |
|                     | Mean             |          | 5.5                     | 7.7      | 1.4                       |

Table 6 . Regional Differences in Direct Recovery Rates and Relative Recovery Rates of Immature to Adult Wood Ducks Banded in Vermont and Wisconsin.

| Recovery   |                               | State of Banding |            |            |            |
|--|-------------------------------|------------------|------------|------------|------------|
|  |                               | Vermont          |            | Wisconsin  |            |
|  |                               | Adult            | Immature   | Adult      | Immature   |
|  | <u>Number Banded</u>          | 1959             | 111        | 183        | 258        |
|  |                               | 1960             | <u>225</u> | <u>573</u> | <u>554</u> |
|  | Years Combined                |                  | 336        | 756        | 812        |
|  |                               |                  |            |            | 2,172      |
| North of and including Minn., Wisc., Mich., N.Y., Conn., & R. I. | <u>Number Recovered</u>       | 1959             | 8          | 17         | 6          |
|  |                               | 1960             | <u>11</u>  | <u>35</u>  | <u>16</u>  |
|  | Years Combined                |                  | <u>19</u>  | <u>52</u>  | <u>22</u>  |
|  |                               |                  |            |            | 104        |
|  | <u>Direct Recovery Rate</u>   | 1959             | 7.2        | 9.3        | 2.3        |
|  |                               | 1960             | <u>4.9</u> | <u>6.1</u> | <u>2.9</u> |
|  | Years Combined                |                  | <u>5.6</u> | <u>6.9</u> | <u>2.7</u> |
|  |                               |                  |            |            | 4.8        |
|  | <u>Relative Recovery Rate</u> | 1959             | 1.3        |            | 1.8        |
|  |                               | 1960             | <u>1.2</u> |            | <u>1.7</u> |
|  | Years Combined                |                  | <u>1.2</u> |            | <u>1.8</u> |
| South of and including Iowa, Ill., Ind., Ohio, Pa., and N. J.    | <u>Number Recovered</u>       | 1959             | 1          | 5          | 10         |
|  |                               | 1960             | <u>6</u>   | <u>18</u>  | <u>19</u>  |
|  | Years Combined                |                  | <u>7</u>   | <u>23</u>  | <u>29</u>  |
|  |                               |                  |            |            | 99         |
|  | <u>Direct Recovery Rate</u>   | 1959             | 0.9        | 2.7        | 3.9        |
|  |                               | 1960             | <u>2.7</u> | <u>3.1</u> | <u>3.4</u> |
|  | Years Combined                |                  | <u>2.1</u> | <u>3.0</u> | <u>3.6</u> |
|  |                               |                  |            |            | 4.6        |
|  | <u>Relative Recovery Rate</u> | 1959             | 3.0        |            | 1.0        |
|  |                               | 1960             | <u>1.1</u> |            | <u>1.4</u> |
|  | Years Combined                |                  | <u>1.4</u> |            | <u>1.3</u> |

Table 7. Direct Recovery Rates for Immature Wood Ducks in Regions Selecting Different Opening Dates for the Hunting Season.

| Opening Date | State         | Number Banded |       | Recovery Rate |            |
|--------------|---------------|---------------|-------|---------------|------------|
|              |               | 1959          | 1960  | 1959          | 1960       |
| Oct. 7-10    | Minnesota     | 375           | 108   | 8.3           | 9.2        |
|              | Wisconsin     | 638           | 1,534 | 8.2           | 9.8        |
|              | Michigan      | 185           | 204   | 11.9          | 8.8        |
|              | Vermont       | 183           | 573   | <u>12.2</u>   | <u>9.2</u> |
|              |               |               | Mean  | 10.2          | 9.2        |
| Oct. 14-30   | Iowa          | 178           | 445   | 7.3           | 9.4        |
|              | Illinois      | 266           | 904   | 3.0           | 6.6        |
|              | Ohio          | --*           | 53    | --            | 3.8        |
|              | New York      | 199           | 496   | <u>5.5</u>    | <u>7.9</u> |
|              |               |               | Mean  | 5.3           | 6.9        |
| Nov. 4-30    | Indiana       | 97            | 294   | 2.1           | 7.8        |
|              | Missouri      | 330           | 187   | 6.4           | 3.2        |
|              | Tennessee     | --            | 90    | --            | 1.4        |
|              | West Virginia | 142           | --    | 3.5           | --         |
|              | Louisiana     | 316           | 162   | <u>6.6</u>    | <u>5.6</u> |
|              |               |               | Mean  | 4.6           | 4.5        |

\* Less than 50 banded birds.

Table 8. Estimate of the 1960-61 Preseason Wood Duck Population in the Atlantic and Mississippi Flyways.

| Source  | Information                  | Estimate |
|---|------------------------------|----------|
| Mail Questionnaire Survey                     | Total Retrieved Hunting Kill | 266,873  |
| Wing Collection Survey                        | Age Ratio (Imm./Ad.)         | 2.1      |
| Mail Questionnaire and Wing Collection Survey | Hunting Kill by Age Group    |          |
|   | Adults                       | 86,088   |
|   | Immature                     | 180,785  |
|   | Total                        | 266,873  |

Table 5

| Direct Band Recovery Rate                                      |                                   |                |
|--|-----------------------------------|----------------|
|  | Adults                            | 0.055          |
|  | Immature                          | 0.077          |
| Direct Recovery Rate Plus<br>Adjustment for Unreported Bands * | Hunting Kill Rate                 | 0.112<br>0.157 |
| Hunting Kill Divided by<br>Hunting Kill Rate                   | Pre-season<br>Population Estimate |                |
|  | Adults                            | 768,643        |
|  | Immature                          | 1,151,497      |
|  | Total                             | 1,920,140      |

\* Geis and Atwood, 1961

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